

DIVISION II
CONSTRUCTION AND MATERIAL SPECIFICATIONS
SECTION 2400 SEEDING AND SODDING

Approved and Adopted this 21st day of October, 1981

KANSAS CITY METROPOLITAN CHAPTER
OF THE AMERICAN PUBLIC WORKS ASSOCIATION

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SECTION 2400 SODDING, SEEDING AND OVERSEEDING

2401 SCOPE: The Contractor shall furnish all plants and materials and perform all operations in connection with the preparation, fertilizing, placing, watering, firming and establishment, of sodded and seeded areas, complete and in strict accordance with these specifications and applicable drawings, and subject to the terms and conditions of the contract. The Contractor shall sod and/or seed disturbed areas where shown on the drawings or by field inspection. The Contractor shall be responsible for establishment of grass.

2402 QUALITY ASSURANCE

2402.1 Qualifications of Workman: Provide at least one person, who shall be present at all times during execution of this work, who is thoroughly familiar with all materials and installation procedures included in the Sodding and Seeding operations as specified herein.

2402.2 Standards:

- A. Certified Sod:** State Certified Sod shall be turfgrass sod, grown from certified high quality seed that has been inspected by the Missouri State Certification Agency.
- B. Certified Seed:** Certified Seed shall be packaged and labeled with an inspection certificate from the Missouri State Certification Agency stating genetic identity, purity and freedom from noxious weeds as well as excessive amounts of other crop and weedy plants at time of harvest.

2402.3 Standard Specifications: Standard specifications shall refer to the American Sod Producers Associations (A.S.P.A.) "Specifications for Turfgrass Sod", and "Specifications for Topsoil Material and Application".

2403 SUBMITTALS: Prior to the delivery to the job site, Contractor shall submit to the Owner the source and supplier of all grass sod, seed, fertilizer and mulch materials along with the type of equipment to be used on this project.

2404 PRODUCT HANDLING

2404.1 Delivery and Storage:

- A. Delivery Containers:** Deliver all items to the site in their original containers with all labels intact and legible at time of Owner's Representative inspection.
- B. Protection:** Use all means necessary to protect all materials before, during and after installation, and to protect the installed work and materials of all other trades.

2404.2 Replacements: In the event of damage or rejection, immediately make all repairs and replacements to the approval of the Owner's Representative and at no additional cost to the Owner.

2404.3 Time of Planting:

- A. Weather Conditions:** All sodding and seeding shall be performed during favorable weather conditions and only during normal and acceptable planting seasons when satisfactory growing conditions exist. The planting operations shall not be performed during times of extreme drought, when ground is frozen or during times of other unfavorable climatic conditions unless otherwise approved by Owner's Representative. The Contractor assumes full and complete responsibility for all such plantings and operations.
- B. Planting Dates:** Recommended dates for all seeding and planting shall be March 15 through April 31 for spring planting and September 1 through October 15 for fall planting.

2405 MATERIALS

2405.1 Sod: All grass sod shall be State Certified, nursery grown native mixture of Hounddog, Rebel, Pride, Cochise, Coyote or other substitute, as may be approved. Sod shall be a Tall Turf type Fescue with 10 percent Bluegrass that is free of objectionable grassy and broadleaf weeds. Sod shall be considered free of such weeds if less than 5 such plants are present per 100 square feet of area. Sod will not be acceptable if it contains any of the following weeds: Common burmuda grass, (wiregrass), quackgrass, johnsongrass, poison ivy, nutsedge, mumblewill, Canada thistle, bindweed, wild garlic, ground ivy, perennial sorrel and brome grass.

- A. Pad Size:** The sod shall be cut to supplier's standard width and length but not less than 12 x 24 inches and not more than 24 x 72 inches or bigger sizes that are approved by the owner. There shall not be broken pads, torn or uneven ends.
- B. Strength:** Root development shall be such that standard size pieces will support their own weight and retain their shape when suspended vertically from a firm grasp on the uppermost 10% of area.
- C. Mowing Height:** Before harvesting sod, it shall be mowed uniformly at a height of 2-2 ½ inches. The sod shall be stripped or harvested by machine at a uniform thickness of 1 ½ inches +/- ¼ inch. Measurement of thickness shall exclude top growth and thatch.

2405.2 Seed: Seed shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under Federal Seed Act. All seed shall be furnished in sealed standard containers unless exception is granted in writing by the Owner's Representative. Seed shall be free from noxious weeds and re-cleaned "Grade A" recent crop seed treated with appropriate fungicide at time of mixing. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable. Seed mix to be used will be identified prior to sowing. The minimum percentage by weight of pure live seed in each lot seed shall be as follows:

A. Seeding – Mix #1 (Turf Areas):

Festuca arundinacea, Fineleaf Tall Fescue. Varieties- Hounddog V. Rebel Jr., Rebel III, Rebel 3D, Barlexas, Millennium, Southern Choice, Tar Heel, Wolf Pack, Bonsai 2000, Shortstop II Coyote, or other pre-approved substitutes.....	62.5%
Poa pratensis, Kentucky Bluegrass. Varieties- Baran, Nassau, Ram I, Nublu, Rugby II, Award, Blacksburg, Challenger, Eagleton, Limousine, Livingston, Midnight, NuGlade, Preakness, Princeton 105, Quantum Leap, 1757 or other approved substitutes.....	25.0%
Lolium multiflorum – annual ryegrass.....	12.5%

B. Seeding – Mix #2 (Low Use Areas):

Fescue ovina, Sheeps Fescue. Varieties- Azay, Big Horn, or other pre-approved substitutes....	15.0%
Fescuca rubra subsp. Commutata, Chewings Fescue, Varieties-James town II, Victory, Tiffany, or other approved substitutes.....	20.0%
Fescuca longifolia, Hard Fescue. Varieties- Spartan, Tournament, Warwick, Discovery, Waldina, Aurora, 4 AG Attila, Reliant II, Scaldis, or other pre-approved substitutes.....	35.0%
Fescuca rubra subsp. Ruba, Creeping Red Fescue. Varieties- Shademaster II, Jasper, Cindy, Pennlawn, or other pre-approved substitutes	30.0%

C. Seeding Rate: Seed mixture shall be sown at the minimum rate of 10 pounds per 1000 square feet for new seeding. See Section 2406.3.E.1 for overseeding rates.

2405.3 Inorganic Fertilizer: Inorganic fertilizer shall be composed of a formula 10-10-10 or other approved substitute, and shall conform to the applicable State fertilizer laws. It shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original unopened containers each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

2405.4 Water: Water, hose and other watering equipment required for the work shall be furnished by the Contractor.

2405.5 Other Materials: Other materials not specifically described by required for a complete and proper planting installation, shall be as selected by the Contractor subject to the approval by the Owner's Representative.

2406 INSTALLATION

2406.1 Job Conditions:

- A. Area:** Areas to be seeded and sodded shall be as shown on the plans or as directed by the City's Representative.
- B. Seasons:** Seeding and sodding shall be performed only during the seasons when satisfactory growing conditions exist. The planting operation shall not be performed during times of drought or other unfavorable climatic conditions. The Owner's Representative shall approve time of planting.
- C. Pre-planting Inspection:** Prior to the work of this section, the Contractor shall carefully inspect the installed work of all other trades and verify that all such work is complete to the point where installation may properly commence.
- D. Discrepancies:** Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

2406.2 Grading and Tillage:

- A. Preparation:** All areas to be seeded and/or sodded shall be tilled or disked to a depth of 3-4 inches and raked or smoothed to remove debris, clods, surface stone 2 inches diameter or larger and weeds. Grades on the areas to be sodded or seeded shall be maintained in true, even and compacted conditions to prevent the formations of depressions. Areas overseeded, to be seeded or sodded that have washed or eroded shall be brought to grade and compacted thoroughly by the Contractor prior to placing the sod, seeding or overseeding. No grading shall be done when the soils are in a muddy or frozen condition.
- B. Steel Edging:** The finish sub-grade of areas to be planted shall be 2" below top of steel edging, if present, for grass sod and flush with top of steel edging for seeding.
- C. Other Edges:** The finished sub-grade next to curbs, sidewalk and drive approaches shall allow for the sod to be placed level with the improvement. The sub-grade shall be finished level with the improvement for seeding.
- D. Fertilizer Application:** For areas to be sodded, and/or seeded, fertilizer shall be applied when area receives final grading and tillage.
- E. Erosion Fencing:** Erosion fencing shall be in place outside of grading/tilling areas when seed bed areas are on any degree of slope.

2406.3 Fertilizer:

- A. Soil Test:** The Contractor has the option to obtain soil tests from a recognized testing laboratory, approved by Owner's Representative, to determine soil pH, nitrogen, phosphorus and potassium requirements and organic matter content. A pH of 5.8 to 7.0 and phosphorus and potassium levels of medium or higher range for the particular test used is required. Soils falling below these test levels must be supplemented with the appropriate materials to meet such test levels.

- B. Fertilizers:** If the above soil test is not performed a 10-10-10 fertilizer shall be applied at the rate of 1,100 pounds per acre. Fertilizer shall be distributed evenly over the area to be seeded or sodded.

2406.4 Installation of Seed and Sod:

- A. Acceptance of Plant Bed:** Acceptance of the plant bed for seeding or sodding shall be obtained from the Owner's Representative for each section of area as indicated on drawings. The Contractor shall be responsible for maintaining the accepted areas until the effective date for planting.

B. Sowing Seed:

1. Seed mixed in proportions shown in Section 2405.2 may be Broadcast by approved sowing equipment. The seed shall be uniformly distributed over the designated areas. The seed shall be covered to an average depth of $\frac{1}{2}$ inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker or other approved device.
2. Areas to be seeded shall be fertilized at rates specified in Section 2406.3. The seedbed shall be free of any irregularities in the surface, and shall be corrected in order to prevent formation of water pockets. All seeded areas are to be completely covered with hydromulch or with straw anchored to the soil a minimum depth of 3 inches by a disc harrow set nearly straight, to properly maintain soil moisture and to provide shade for the newly germinated chutes.
3. Promptly after seeding, wet the seedbed thoroughly, keeping all areas moist throughout the germination period. Protect all turf areas by erecting temporary fences, barriers, signs, etc. as necessary to prevent trampling and disturbance.
4. When delays in operations carry the work beyond the most favorable planting season for the grasses designated, or when conditions are such, by reason of drought, high winds, excessive moisture, or other factors that satisfactory results are not likely to be obtained, the seeding operation shall be stopped and work shall be resumed only when conditions are favorable again or when approved alternative or corrective measures and procedures have been put into effect. If inspection during seeding operations or after indicate there are areas which have been skipped, the sowing of additional seed on these areas will be required.
5. The seeded areas will be inspected for acceptable grass coverage and will be acceptable when grasses designated are growing and are in good condition and no area more than $\frac{1}{2}$ of one percent of the total areas shall be bare, of which no single area shall be more than one foot square in area. Any bare area larger than this will not be acceptable and shall be reseeded.

C. Hydroseeding:

1. Seed and fertilizer, mixed in proportions previously specified, may be broadcast in a hydromulch with water which forms an emulsion and covers the prepared designated areas in a uniform manner.

2. Areas to be hydroseeded shall be fertilized at rates specified in Section 2406.3. The seed-bed shall be free of any irregularities in the surface, and shall be corrected to prevent formation of water pockets.
3. Hydromulch used shall be a wood fiber mulch with tackifier, such as Conwit 2000, or approved equivalent. Hydromulch shall be applied at the rate of 1500 lbs. per acre.
4. Hydroseeder filling tank should be $\frac{1}{2}$ full of water before adding seed, fertilizer and hydromulch components. Begin agitation while adding remaining water so that a uniform mixture is obtained. Seed, fertilizer and hydromulch components shall not be added to water more than four (4) hours prior to application.
5. Discharge hydromulch slurry mix on prepared soil for uniform distribution.
6. Keep all areas seeded moist throughout germination period. Protect all turf areas by erecting temporary fences, barriers, signs, etc. as necessary to prevent trampling and disturbance.
7. The seeded areas will be inspected for acceptable grass coverage and will be acceptable when grasses designated are growing and are in good condition and no area more than $\frac{1}{2}$ of one percent of the total areas shall be bare, of which no single area shall be more than one foot square in area. Any bare area larger than this will not be acceptable and shall be reseeded.

D. Sodding:

1. Sod shall not be harvested or delivered when excessively wet or dry. Sod shall be harvested, delivered and installed within a period of 36 hours.
2. Areas to be sodded shall be fertilized at the rates specified in Section 2406.3. The sod-bed shall be free of any irregularities in the surface resulting from fertilizing or other operations and shall be corrected in order to prevent the formation of water pockets.
3. The first row of sod should, if possible, be laid in a straight line with subsequent rows placed parallel and tightly against one another. Lateral joints shall be staggered as in brick laying to promote more uniform growth and strength. Care shall be exercised to ensure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would otherwise cause air drying of the roots. Where new sod meets existing grassed areas, a straight, vertical edge shall be cut to allow smooth match. Sod shall be watered and firmed in accordance with Section 2406.3.D.5. If it is necessary to walk excessively on newly laid sod or soil, walking boards should be laid for this purpose.
4. Sod shall be laid with staggered joints and at right angles to direction of slope. Sod shall be secured by tamping or rolling. On slopes 1 in 3 or steeper, all sod shall be pegged with $\frac{1}{2}$ inch square by 8 inch long wooden pegs, or approved equal, driven to the top of the sod. Four pegs per square yard shall be required.

5. The Contractor shall be responsible for having adequate water available at the site prior to and during the installation of the sod and the areas to be seeded. The sod shall be watered immediately after installation to prevent drying during progress of the work. As sodding is completed on any one section, the entire area shall be thoroughly irrigated to a one inch depth below the new sod pad. After a short drying period, the sod shall be rolled with a roller weighing not less than 60 or more than 90 pounds per linear foot to firm the sod pad and smooth minor surface irregularities. Subsequent watering should maintain moisture to a depth of at least four inches.
6. The sodded areas will be inspected for the acceptable grass coverage and will be acceptable when grasses designated are growing and are in good conditions, and no area more than $\frac{1}{2}$ of one percent of the total area shall be bared or dead, of which no single area shall be more than one foot square in area. Any bare or dead area larger than this will not be acceptable, and shall be re-sodded.

E. Overseeding:

1. All designated existing turf areas being overseeded shall use seed previously specified at the rate of 160 pounds per acre in a uniform manner.
2. Areas to be overseeded shall be fertilized at rates previously specified. The seed-bed shall be free of any irregularities in the surface, and shall be corrected in order to prevent formation of water pockets.
3. Seed shall be applied with a seed drill. The seed drill shall verticut the soil to a minimum depth of $\frac{1}{2}$ inch at not more than $1 \frac{1}{2}$ inch spacing between furrows.
4. Areas that have washed or eroded shall be brought to grade and compacted prior to overseeding.
5. The seeded areas shall be inspected for acceptable grass coverage and will be acceptable when grasses designated are growing and are in good condition. Not more than $\frac{1}{2}$ of one percent of the designated turf area shall be bare, of which no single area shall be more than one foot square in area. Any area left unseeded larger than this will not be acceptable, and be reseeded.

2407 ACCEPTANCE OF SODDING AND SEEDING

2407.1 Acceptance: The Contractor shall be responsible for maintaining the installed grass seed and sod until all areas are complete and accepted by the Owner's Representative. Acceptance by the City will occur when areas seeded and/or sodded are determined to be established turf areas ready for mowing. Grass areas in excess of one (1) square foot that are dead or in poor condition regarding color and quality shall be replaced at the Contractor's expense prior to the initiation of the Maintenance Period.

2407.2 Sod Watering: Throughout the Maintenance Period, the Contractor shall be responsible for watering the installed sod until it is established and ready for mowing. In the absence of rainfall, watering shall be performed daily during the first week and shall be sufficient to maintain moist soil to a depth of at least 4 inches. Soil on sod pads shall be kept moist at all times. Watering may be done during the heat of the day to help

prevent wilting. After the second week, the Contractor shall water the sod as required to maintain adequate moisture in the upper 4 inches of topsoil necessary for the promotion of deep root growth until final acceptance as established turf areas ready for mowing.

2407.3 Seed Watering: The Contractor shall be responsible for watering seeded areas following the substantial germination of the seed and the occurrence of a dry or drought period. Continued watering will be required until final acceptance as established turf areas ready for mowing.

2407.4 Acceptance Notification: After acceptance of the seeded or sodded area by the Owner's Representative, the Contractor shall by door hangers or other approved methods, notify all affected property owners that the maintenance of the grassed areas is now their responsibility.

2408 CLEAN-UP: During the progress of this work and upon completion, thoroughly clean the project area, remove and properly dispose of all resultant dirt, debris and other waste materials.

2409 MEASUREMENT AND PAYMENT

2409.1 Measurement:

A. Seeding and Overseeding:

1. Per acre (hectare) or hundredth party thereof
2. Horizontal in linear feet (decimeter) along the centerline of sewer, regardless of the width of disturbed areas or type of seed used. Seeding will be measured only when centerline of sewer lies in grassed areas to be seeded as shown on the plans. Areas that are disturbed which lie outside the Contractor's normal trenching operation areas will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction. Each area measured will be measured either as seeding or sodding, but not as both. When sewer ends in grassed area, measurement will be made only to centerline of manhole.
3. Horizontal in linear feet (decimeter) along the back of curb (edge of pavement) regardless of the width of disturbed areas or type of seed used. Measurement will be made on each side of the roadway. No measurement will be made through or along intersecting roadways, drive approaches or similar structures.

B. Sodding:

1. Per square yard (square meter).
2. Horizontal in linear feet (decimeter) along the centerline of sewer, regardless of width of disturbed areas or type of sod used. Sodding will be measured only when centerline of sewer lies in grassed areas to be sodded as shown on the plans.

Areas that are disturbed which lie outside the Contractor's normal trenching operation areas will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction. Each area measured will be measured as either seeding or sodding, but not as both. When sewer ends in grassed areas, measurement will be made only to centerline of manhole.

3. Horizontal in linear feet (decimeter) along the back of curb (edge of pavement) regardless of the width of disturbed areas or type of sod used. Measurement will be made on each side of the roadway. No measurement will be made through or along intersecting roadways, drive approaches or similar structures.

2409.2 Payment:

A. Contract unit bid price

B. Contract lump sum bid price